ARIZONA JUDICIAL BRANCH
ENTERPRISE ARCHITECTURE STANDARDS

Definitions/Implications

Definitions	Implications
Baseline – Listing of products and services typically in use today within the court system.	Provides context to aid reader in understanding the layer or scope being specified by the row in the table.
Retirement – Obsolete product or technology being targeted for de-installation.	No new use allowed without exception being granted by COT. Necessitates specific strategy in next IT Strategic Plan for removal/replacement within plan period.
Containment – Use of product or technology limited to maintenance and current commitments only.	No additional use allowed without exception being granted by COT, except enhancement or expansion of a current implementation. The next stop on the lifecycle is retirement; therefore, further investment is unwise and serves to make removal/replacement more difficult and expensive.
Mainstream – The current standard for any new systems or migrations from legacy systems.	The primary option when adopting a new technology or selecting a new product. Any other choice requires that an exception be granted by COT.
Scope of Standard – Elaborates on the degree or range of application of the mainstream item.	Distinctions may be made by function, court size, or jurisdiction, for example.
Watchlist – Emerging technologies products or releases being considered for adoption but not yet formally adopted.	Included for court reference, these items may be dropped or moved to mainstream in the next revision of the table as more becomes known about them. Courts should proceed cautiously in this area, using a pilot approach to implementation.
Comments – Any related information not fitting within the other columns.	
Exception – A formal agreement to enable the court to pursue a non-mainstream direction or install a non-standard product.	Requires use of the exception request document available at https://www.azcourts.gov/cot/EnterpriseArchitectureStandards.aspx and submittal to TAC for recommendation to COT for a formal motion. Exceptions are granted only to the court requesting the exception – further development or use outside that court requires a further exception.

Updates

A bi-annual review of these standards by the Technical Advisory Council is recommended. Local or state automation projects requiring exceptions can initiate a review of selected items at any time.

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Architecture Layers	Baseline (currently in use)	Retirement (targeted for de-investment)	Containment (limited to maintenance & current commitments)	Mainstream FUTURE (for new systems or legacy migration)	Scope of Standard	Watchlist: Emerging Technologies (to be evaluated for future inclusion)	Comments
Applications & Tools							
User Interface Delivery Method for Public Access	Browser-based: IE, Edge, Firefox, Chrome	IE	HTTP unsecured anything, all links should use HTTPS/TLS	Browser-based (Version Support) Responsive Web Design using TLS (HTTPS)	For Microsoft Edge, Firefox, Google Chrome, Safari, Mobile Device Browsers	Edge (chromium based)	Websites should indicate browsers tested
User Interface Delivery Method for Business Applications	Browser-based, Windows Forms, ASP.Net, WPF	Character based, Silverlight, Plugin-based, Classic ASP	.NET FULL Framework	.Net CORE based, Browser-based, WPF, Windows forms		UWP, Xamarin, Native Mobile Apps, HTML5	
Electronic Document Management	Hyland OnBase, SIRE, FileNet, OpenText	Hyland OnBase <17	Hyland OnBase 17/18	Hyland OnBase 18		Hyland OnBase Foundation	
Document Imaging	Kofax, OnBase Scanning Module, PaperPort, ScandAllPro	Kofax Card (SCSI connection)	Kofax Ascent Capture	OnBase Production Document Imaging			See sep stds for non-OnBase scanning
Report Writer for Ad Hoc Reporting	Crystal Enterprise, Crystal 8-11, SSRS	Crystal <10, MS SQL Server Reporting Services ≤2005	Crystal 10, MS SQL Server Reporting Services 2012	Crystal >10, MS SQL Server Reporting Services 2017+, R (language)		MS SQL Server Reporting Services 2019, SAP Enterprise 15	
Report Writer for Business Application Reports	Varies: Crystal, native application report writers, "hard coded" reports, SSRS, Report Builder	Crystal <10, MS SQL Server Reporting Services 2005	Crystal 10; MS SQL Server Reporting Services 2017	Crystal 11+, MS SQL Server Reporting Services 2019, PowerBI, R		SAP Reports 15	

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Data, Research, and Analysis Tools	SPSS SAS			SPSS, PowerBI, SAS, MS Analysis Services (SSAS)		R, Python	
Development Languages	.ASP, .ASPX, classic ASP, .NET, JAM, RPG, VB6, C#, javascript, PERL, COBOL, WebAPI	ASP (Classic), COBOL, JAM, RPG, Windows Workflow Foundation	Java, .NET FULL Framework	.NET CORE 3.0+, .Net supported Languages, JavaScript, Python, XAML, HTML/CSS			Open Source must be approved by TAC prior to production use
Development Environment	Visual Studio, PowerBuilder, Panther, MS-Access, Creative Suite, Hawkeye, Eclipse, PHP, JAM, Nevron	Visual Studio ≤2015, Panther, MS-Access	Visual Studio 2017	Visual Studio 2019, VS Code			Open Source must be approved by TAC prior to production use
Source Control	Visual Source Safe, CCC Harvest (Phx.), Aldon (JOLTS), Team Foundation Server, Git, SVN	Aldon, VSS, CCC Harvest, Mercurial	SVN, source control process	Git or TFVC	All developed systems		
Analysis Tools	Visio, Erwin, BPWin, Rational			UML, BPEL BPMN, R, Power BI			
Code Generation	PowerBuilder, Visible Developer, Alachisoft	Alachisoft, Visible Developer		T4, LinqToSchema	Legacy APIs, WebAPIs, REST, gRPC, OpenAPI		

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Office/Personal Productivity Tools							
Word Processing	Word	Word≤2016	Word 2018	Office 365 Word 2019			
Spreadsheet	Excel	Excel ≤2016	Excel 2018	Office 365 Excel 2019			
Presentation	PowerPoint	PowerPoint ≤2016	PowerPoint 2018	Office 365 PowerPoint2019			
Local Standalone Database,	MS-Access, TurboImage, T-SQL, PostgreSQL	MS-Access ≤2016	MS-Access 2018	Office 365 Access 2019	Non-Production use only		
E-mail Client Product	Outlook, GroupWise,	Outlook ≤2016, GroupWise (unsupported versions)	Outlook 2018, GroupWise (supported versions)	Office 365 Outlook 2019			
Instant Messaging	MS-Lync, Skype for Business, IBM Sametime, Jabber	MS-Live Communication Server, Lync, Skype for Business 2015	Skype for Business 2016	Skype for Business 2019, Jabber	Skype for Business on AJIN	Teams	
Collaboration	SharePoint, Exchange + Outlook, MS-Office, Office 365, WebEx, Google Apps, GoToMeeting, SMART Notebook, Dynamics	Live Communication Server, SharePoint Server <2013, Google Apps	SharePoint Server ≥2013, Skype for Business,	SharePoint Services, WebEx, GoToMeeting, MS-Dynamics CRM, Teams			
Social Media Tools				Per Local Court Business Policy			

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Desktop Virtualization	VMWare, Citrix			VMware View, Citrix Xen	Thin Client Installation		
Distance Learning	Centra, Granicus, Accord LMS		Centra	Granicus, Accord LMS			
Data Architecture							
DBMS	Informix, , SQL Server, MySQL, Oracle, Progress, B-trieve	SQL Server 2012 R2, Informix ≤11.7.x	SQL Server 2012 R2/2014, Informix 121, MySQL 7.5	SQL Server 2016 / 2019, MySQL 8.0	Court core business applications (on a business case need basis)	SQL Server Next Ver., Document Databases, Azure SQL, EventStore, MySQL Next Ver.	Black box DBMS not incl. Azure on the Government Cloud Only
DBMS Modeling Tools	Idera ER/Studio Data Architect, PowerDesigner, Erwin, Visio	Power Designer <16.x	Power Designer 16.x	Idera ER/Studio Data Architect, Erwin, Visio	UML 2.0 compliant		Tools must be capable of creating alter scripts to update database schemas.

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Data Exchange Model	JXDD 3.0.0.1, Fixed format, XML homegrown, Electronic Court Filing (ECF)	XML homegrown,	Fixed format, GJXDM	NIEM, ECF 4.X, JSON+REST (for resources), OpenAPI	Between autonomous systems	gRPC, Microservices, ECF 5.X	In conjunction with the Arizona Criminal Justice Commission's Arizona Data Dictionary. XML standard at https://docs.oasis-open.org/legalxml-courtfiling/specs/ecf
Scanning Format	Tagged Image File Format (TIF), Portable Document Format (PDF)			Tagged Image File Format (TIF), Portable Document Format (PDF)		Searchable PDF/A	
Audio File Format	Proprietary formats, .WAV			Uncompressed .WAV format	For interchange with other courts and archive		Industry-standard output must be playable by non-proprietary readers.

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Video File Format/ Protocol	Proprietary formats, AVI			SIP, H.323 H.264 (720p HD, 30 fps) AVI, NTSC	Transmission over AJIN only Storage	WebRTC	Max 512 kbps/ concurrent session
Email Protocol	SMTP, MIME			SMTP and MIME			
Data Transmission Encryption	Triple DES, AES	Triple Data Encryption Standard (DES)		Advanced Encryption Standard (AES), DPS FIPS 140	Per ACJA 1-503, the encryption key shall be maintained by AJIN mgt for all public records		For data encryption over public networks
Stored Data Encryption	BitLocker			BitLocker Back up data on mobile devices to court servers before encrypting	Per ACJA 1-503, the encryption key shall be maintained by AJIN mgt for all public records		
E-mail Encryption	Secure Mail Gateway, S/MIME, Office 365		S/MIME	Exchange 365 Encrypted e-Mail			
Networks and Platforms							
Network Protocol	Transmission Control Protocol/ /Internet Protocol (TCP/IP)			TCP/IP, IPSec 4 (IPv4)		IPSec 4 (IPv6)	
Wireless Network Access	WPA, WPA2, Web-Auth			PEAP, WPA2			

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Client Operating System	Windows 7, 8.1, 10	<Windows 10 1809	Windows 10 1809	Microsoft Windows 10	Current supported versions only – previous versions are contained or retired		
Client Device Antivirus & Antimalware	McAfee, Sophos, Symantec, Trend, AVG, Cylance, MS-Endpoint Protection			McAfee, Trend, Sophos, Symantec, CylancePROTECT, MS-Endpoint Protection	Sophos req'd on AJIN Requires multiple layers	CrowdStrike, Carbon Black	
Server & Network Operating Systems	Microsoft Windows, UNIX, OS/400, AIX, Solaris, Linux	OS/400, Microsoft Windows ≤2008 R2	Microsoft Windows Server 2012 R2	Microsoft Windows Server 2016 / 2019, UNIX, Linux	For enterprise applications and access thereto	Windows Server Next Ver.	
Patch Management	WSUS, LANDESK			SCCM, WSUS, LANDESK			
Vulnerability Scanning Tool	Tenable Nessus, ip360 (nCircle)			Nessus Manager, Nexpose			
Server Antivirus & Antimalware	McAfee, Trend, Sophos, Symantec, Cylance			McAfee, Sophos, Symantec, Trend, CylancePROTECT	Sophos req'd on AJIN		
Server Virtualization	VMware ESX HyperV			VMware vCenter ESX HyperV	Only for ≤2012 R2	Microsoft Docker	
Mobile Operating Systems	Apple IOS, Android, Windows			Windows Mobile, IOS	AOC-provided devices for access to statewide apps		

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Software as a Service							
Office Productivity	Office 365			Office 365			
Shared Services							
Component Service Layer	DCOM, ASP, SOAP, MS-Windows Communication Foundation (WCF)	DCOM, ASP (classic), Remoting	Services (previous version), unstructured APIs, WCF	Services (current version)	Services must use structured, published APIs	Services (next version)	
Directory Services	Active Directory, LDAP			Active Directory, ADFS LDAP, AD-LDS	Within Branch Outside Branch		
Electronic Signatures	/s/ with internal two-factor authentication; signature pad; biometrics			MS Office Digital Signature, Adobe Digital ID	Self certification within court network	PKI, signature pad, biometrics, eSeal	Requires court policy changes accompanying e-filing.
Login Authentication	UserID/Password, Biometrics	Unsecured content	UserID/Password	UserID/Password with 2FA, Biometrics	2FA for certain employee roles	PIV, Login.gov, Government Issued Electronic ID, Smart Devices	
Remote Access through Internet by employees or contractors	VPN with IPSec, VPN with proprietary encryption, 3DES, AES	ipsec/AnyConnect		AnyConnectSSL	with posture validation and enforcement on AJIN, Windows 10		
Remote Access through Internet by vendors or trusted partners	TeamViewer, GoToMeeting	ipsec/AnyConnect; TeamViewer n-2 version	TeamViewer n-1 version	TeamViewer latest version	OnBase remote administration		

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Message Transport Middleware							
Message Transport	MQ	MQ ≤V7.1	MQ V7.5/V8.0	MQ V9.0, MQ SSL		MQ 9.2	
Data Transformation ETL	MQSI, Data Junction, Cloverleaf, BizTalk, Scribe	Data Junction, MQSI, DTS	Cloverleaf, WMB 10.0, BizTalk	SSIS Scribe	At the state level; not required at the local level. (Dynamics/Agave)		
Data Routing/Publish and Subscribe	MQSI; Cloverleaf, BizTalk	MQSI	Cloverleaf, WMB 10.0, BizTalk	MQ V9.0	At the state level; not required at the local level.		
File Transfer, Transactional and Scheduled Production (Mission Critical)	FTP, SFTP, HTTP, MQ	FTP (intercourt and using public Internet), MQ ≤7.1	SFTP (intracourt only), MQ V7.5/ 8.0	MQ V9.0, Web Services, SFTP*	Scheduled production transfers of data; NIEM and ECF standard message formats		Exceptions must meet criteria*
File Transfer, Production Non-Transactional and Ad Hoc (Not Mission Critical and Not Sensitive)	FTP, SFTP, HTTP, MQ	MQ ≤7.1, FTP	MQ V7.5/8.0	MQ V9.0, SFTP	One-time, unscheduled bulk transfers of data only		
Jury Business Applications							
Jury Management	Jury+, Jury for Windows	<Jury+NG	Jury+ NG	Jury+ WebGen (see ACJA 1-501)			

* IBM MQ is REQUIRED for production file transfer. If for any reason you cannot use IBM MQ, your service must operate asynchronously and provide:

1. Guaranteed data delivery and recovery, even after a network interruption or server outage;
2. An administrative layer that tracks the status of both sides of the transfer;
3. Ability to translate from one file format to another or to transform data;

4. Data validation following transfer; and
5. Internal routing beyond the default path following receipt.

Exceptions

Exception Process Evaluation Principles (detailed in *Enterprise Architecture Standards Exception Request Document* at https://www.azcourts.gov/cot/EnterpriseArchitectureStandards.aspx/EAS_Exception.doc*):*

1. City/County investment has already been made (apart from the court) that reduces the cost to the court.
2. Overall cost (total cost of ownership) is reduced from that of implementing the statewide standard. This savings must be balanced against the potential impacts to the broader Branch initiatives. Specific areas to be considered are: financial leverage, integration, support, and training.
3. Overall risk is reduced from that of implementing the statewide standard.
4. The local IT function is/will be providing support.
5. The technology demonstrates long-term viability. This must include the consideration of the vendor's viability and future costs to evolve the technology solution.
6. Substantially greater productivity is enabled through adoption of a local standard.

In addition, the court requesting an exception agrees to bear any later costs at the local level necessary to integrate the exception component or system with a statewide standard component or core system.

Arizona Code of Judicial Administration 1-505 adopts this document. It references this document, as maintained and published on the Commission on Technology Web site, as the Arizona Judicial Branch Enterprise Architecture Standards.